John F. Kennedy Space Center Business Objectives and Agreement for the Engineering Development Directorate

Submitted by:

___*Original Signed*_ ___

Director of Engineering Development

Approved by:

___*Original Signed*_ ___

Center Director

November 1997

National Aeronautics and
Space Administration

John F. Kennedy Space Center

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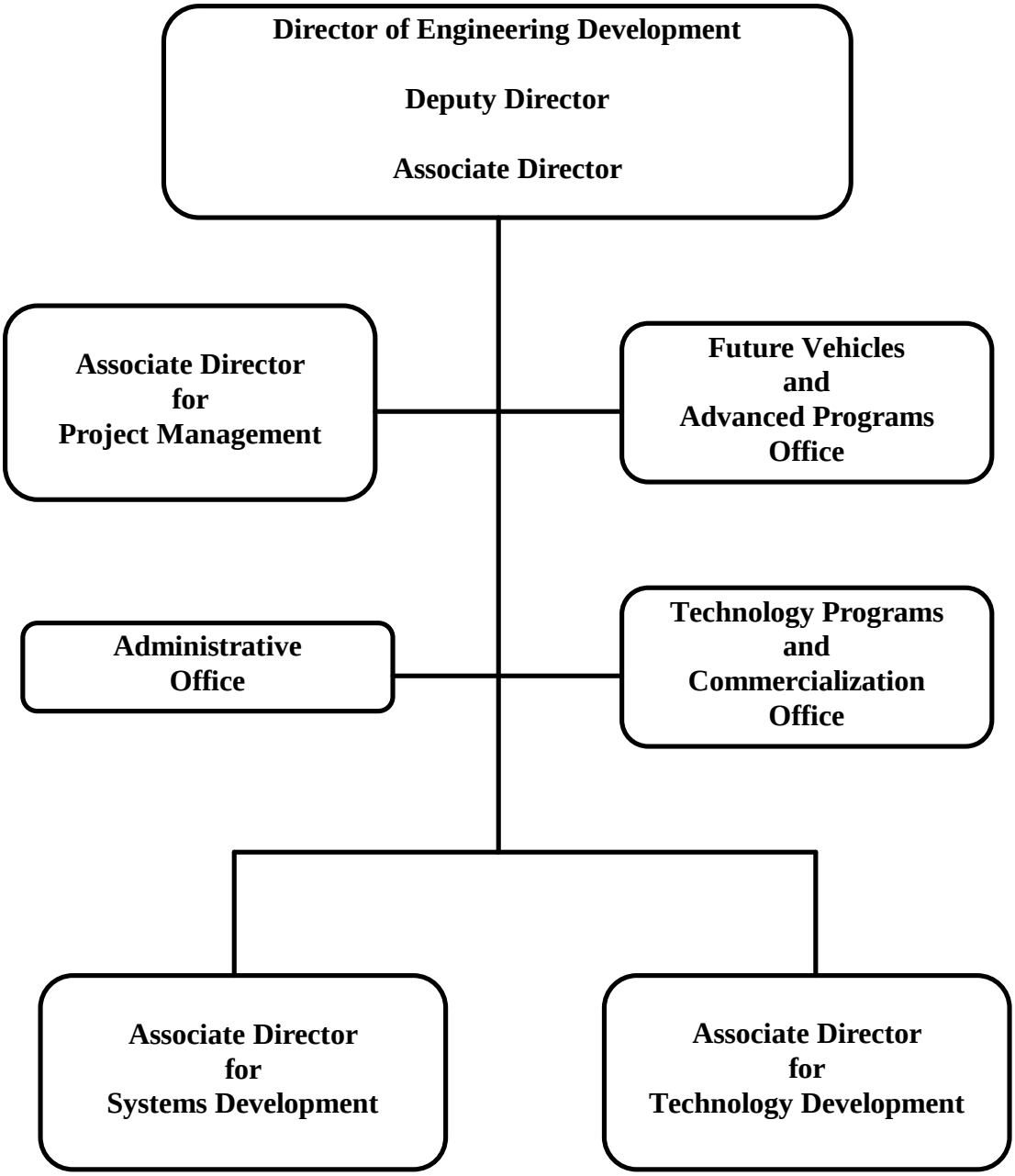
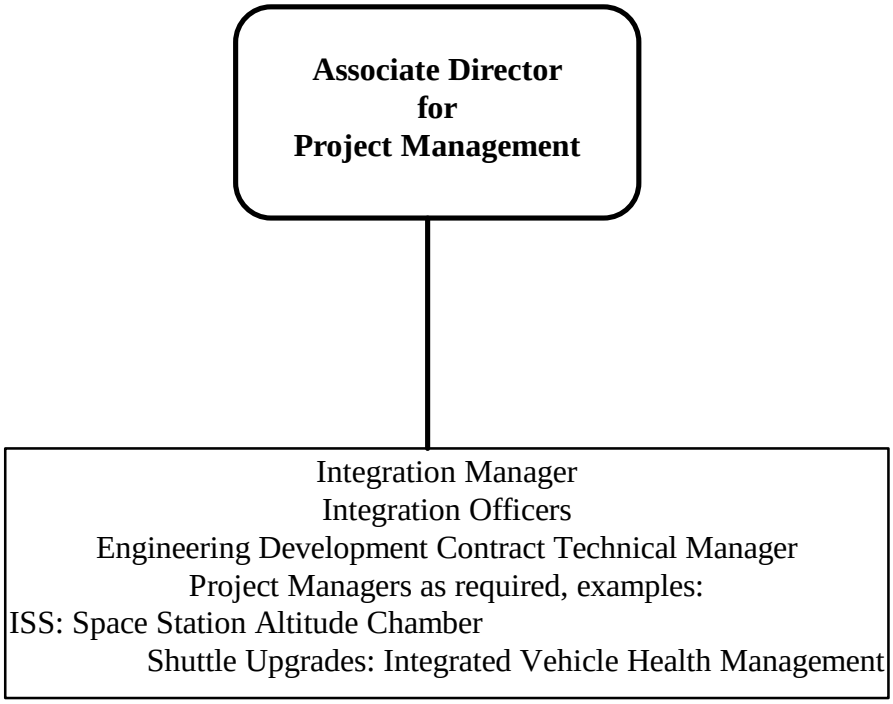
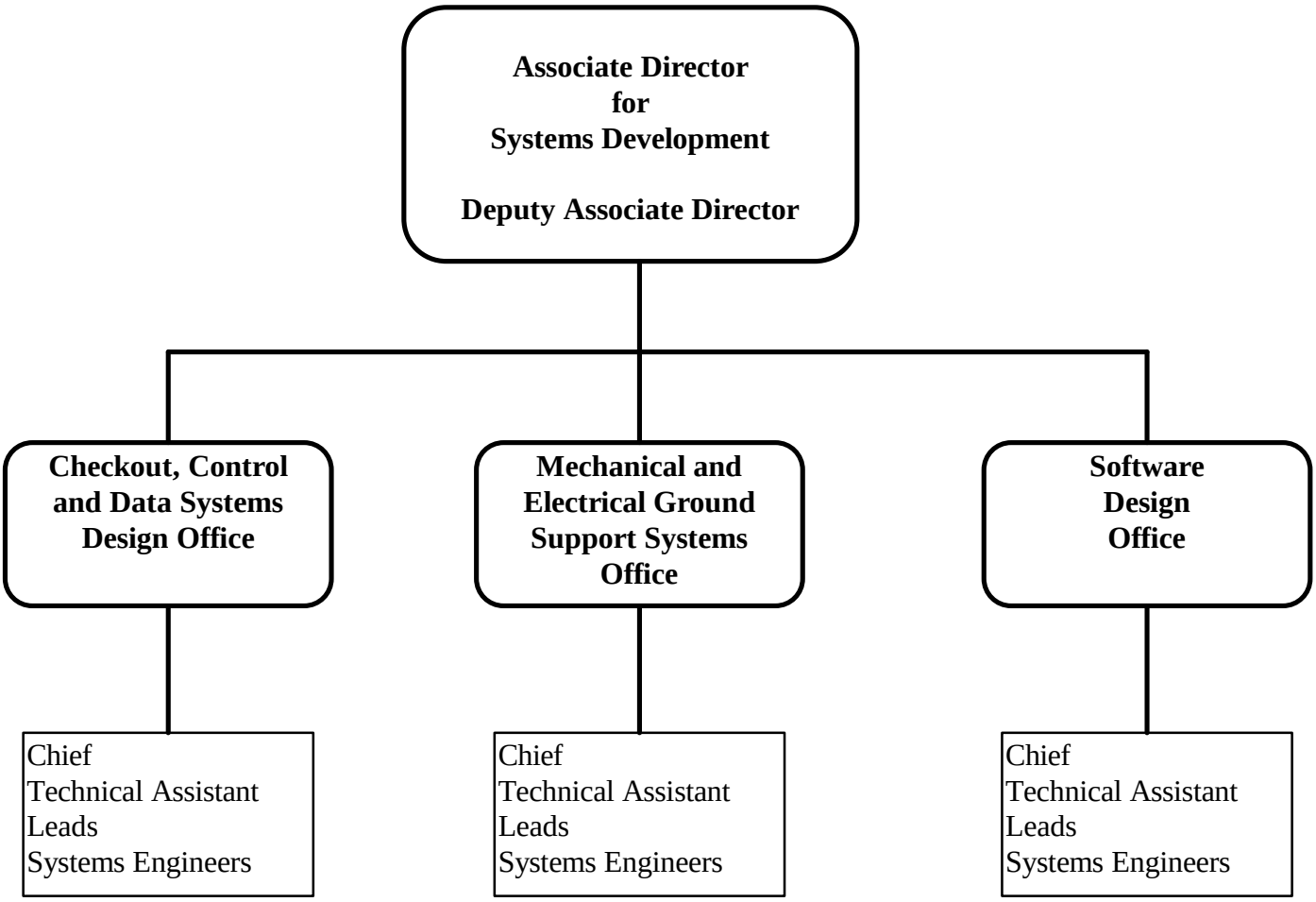
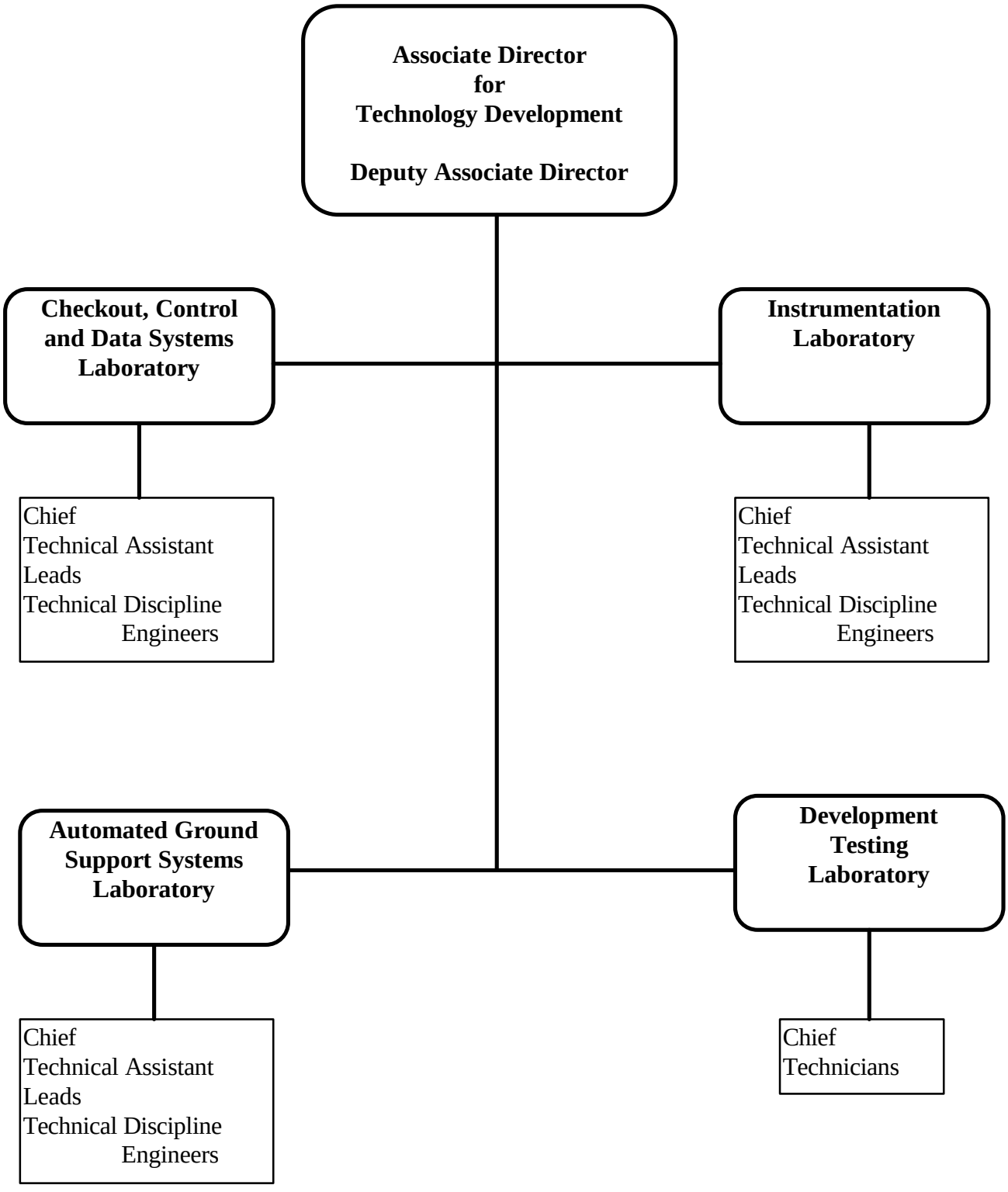
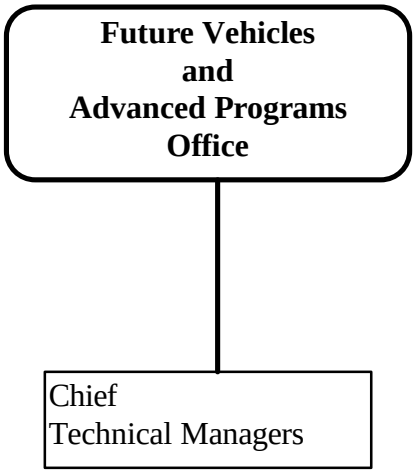
1.0 ORGANIZATIONAL RESPONSIBILITIES




Associate Director
for
Project Management
Integration Manager
Integration Officers
Engineering Development Contract Technical Manager
Project Managers as required, examples:
ISS: Space Station Altitude Chamber
Shuttle Upgrades: Integrated Vehicle Health Management


Associate Director
for
Systems Development
Deputy Associate Director
Checkout, Control and Data Systems Design Office
Mechanical and Electrical Ground Support Systems Office
Software Design Office
Chief
Technical Assistant
Leads
Systems Engineers
Chief
Technical Assistant
Leads
Systems Engineers
Chief
Technical Assistant
Leads
Systems Engineers


Associate Director
for
Technology Development
Deputy Associate Director
Checkout, Control and Data Systems Laboratory
Instrumentation Laboratory
Chief
Technical Assistant
Leads
Technical Discipline
Engineers
Chief
Technical Assistant
Leads
Technical Discipline
Engineers
Automated Ground Support Systems Laboratory
Development Testing Laboratory
Chief
Technical Assistant
Leads
Technical Discipline
Engineers
Chief
Technicians


Future Vehicles
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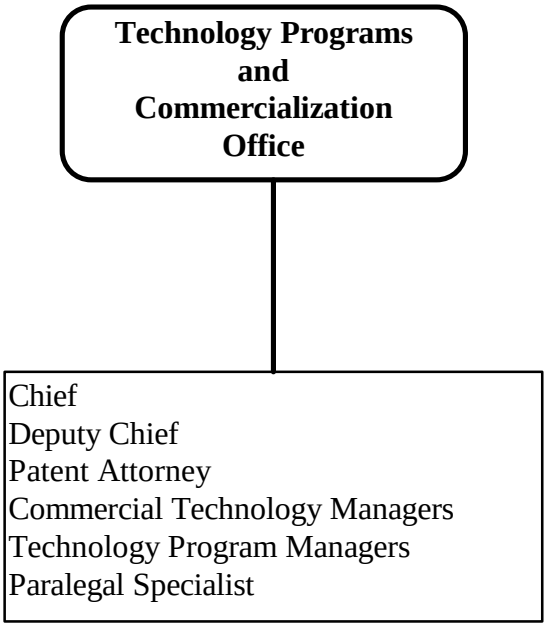
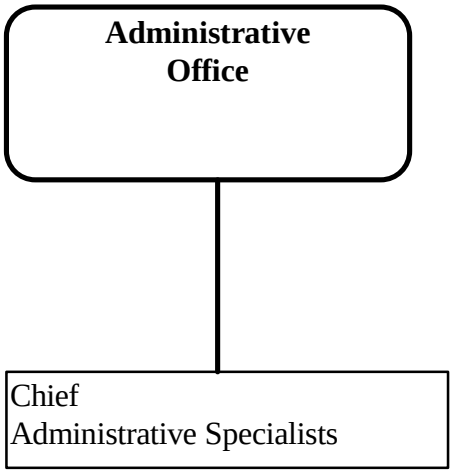
Advanced Programs
Office
Chief
Technical Managers


Technology Programs and Commercialization Office
Chief
Deputy Chief
Patent Attorney
Commercial Technology Managers
Technology Program Managers
Paralegal Specialist


Administrative
Office
Chief
Administrative Specialists

Responsibilities

Director	Management of the Engineering Development Directorate.
	KSC Chief Engineer.
Deputy Director	Management of the Engineering Development Directorate in the absence of the Director.
	Management of Future Vehicles and Advanced Programs.
Associate Director	Assists Director in formulation, preparation, and maintenance of the directorate's management policies through management, engineering consultation, and assessment of technical performance.
	Integration of Directorate Activities.

Project Management

Associate Director	Oversight and Management of the Project Management Directorate.
	Integration, reporting, process management and control for KSC Integrated Product Development Teams.
Integration Manager	Manages integration functions to ensure that directorate Business Plans and Practices are accomplished.
	Single point-of-contact for all directorate activities with the Chief Financial Officer.

EDC Contract Technical Manager	Management and oversight of the technical content of the Engineering Development Contract. Review of contract to ensure appropriate funding and definition of tasks assigned to the Engineering Development Contract. Integration of the Contract Award Fee Evaluations for the directorate.
Integration Officers	Integration of resources and project schedules for the Directorate.
Project Managers	Point of contact for all Directorate customers for communication, integration, reporting and implementation of customer requirements. Project Management of design, development and implementation for assigned directorate projects for customers such as International Space Station, Payloads, Shuttle, Shuttle Upgrades, new future vehicles and Advanced Development. Implement projects by forming and managing Integrated Product Development Teams. Management of project resources, technical progress and design reviews, project schedules, performance metrics, and customer satisfaction. Manage systems development for future projects related to special launch and access structures, transportation vehicles, mechanical and fluid systems and associated control systems.

Systems Development

Associate Director	Management of Systems Development personnel and resources to: ■ Maintain technical skills and adequacy, ■ Provide formal and hands-on development training opportunities and professional advancement, ■ Promote engineering professionalism across the KSC civil service workforce. Assure technical adequacy of engineering products. Develop and document a system for capturing past and future design and development rationale to enable ongoing core skill development.
Deputy Associate Director	Assists Associate Director of Systems Development Management of Systems Development in the absence of the Associate Director.

Checkout, Control and Data Systems Design Office

Chief	Management of Checkout, Control and Data Systems personnel and resources to support the goals of the Associate Director for Systems Development. Support Project Management customer requirements by providing core expertise to Integrated Product Development Teams.
Technical Assistant	Technical assistance to the Checkout, Control, and Data Systems Office Chief.
Lead, Systems Architecture	Senior hardware/software systems design engineer for systems architecture.

	System level architecture design based on the product life cycle. Management of assigned resources.
Lead, Subsystems Design	Senior hardware/software systems design engineer for subsystems design. Management of assigned resources.
Lead, Systems Support	Senior hardware design engineer for systems support activities, including design tools, mechanical assemblies design, and cable assemblies design. Management of assigned resources.
Systems Engineers	Design team members for design and development of assigned projects. Guidance and assistance to other engineers and customers.

Mechanical and Electrical Ground Support Systems Office

Chief	Management of Mechanical and Electrical Ground Support Systems personnel and resources to support the goals of the Associate Director for Systems Development. Support Project Management customer requirements by providing core expertise to Integrated Product Development Teams.. Management of associated qualification and testing facilities.
Technical Assistant	Technical assistance to the Mechanical and Electrical Ground Support Systems Office Chief.
Lead, Fluids and Propellants	Senior system design engineer in fluids and propellant systems.

	Management of assigned resources.
Lead, Handling and Umbilicals	Senior system design engineer in handling and umbilical systems.
	Management of assigned resources.
Lead, Transportation and Structures	Senior system design engineer in transporter and launch structure systems.
	Management of assigned resources.
Lead, Electrical Systems	Senior system design engineer in electrical systems
	Management of assigned resources.
Lead, Engineering Analysis	Senior system design engineer in engineering analysis.
	Management of assigned resources.
Systems Engineers	Design team members for design and development of assigned projects.
	Guidance and assistance to other engineers and customers.

Software Design Office

Chief	Management of Software Design personnel and resources to support the goals of the Associate Director for Systems Development.
	Support Project Management customer requirements by providing core expertise to Integrated Product Development Teams..
Technical Assistant	Technical assistance to the Software Design Office Chief.
Lead, Systems Interfaces	Senior hardware/software systems design engineer in the areas of systems interfaces and protocols.
	Management of assigned resources.

Lead, Systems Applications	Senior software systems design engineer in the areas of applications software, across various languages and operating systems. Management of assigned resources.
Lead, Systems Simulations	Senior software design engineer in the areas of simulations, including various simulation tools and techniques for real-time system requirements. Management of assigned resources.
Systems Engineers	Design team members for design and development of assigned projects. Guidance and assistance to other engineers and customers.

Technology Development

Associate Director	Management of Technology Development personnel and resources to: ■ Maintain technical skills and adequacy, ■ Provide formal and hands-on development training opportunities and professional advancement, ■ Promote engineering professionalism across the KSC civil service workforce. Management of Directorate's technology development, technology assessment, laboratories, commodities and equipment for the Checkout, Control and Data Systems, Instrumentation, Automated Ground Support Systems and Development Testing Laboratories. Assure technical adequacy of engineering products.
Deputy Associate Director	Assists Associate Director of Technology Development. Management of Technology Development in the absence of the Associate Director.

Checkout, Control and Data Systems Laboratory

Chief	Management of Checkout, Control and Data Systems Laboratory personnel and resources to support the goals of the Associate Director for Technology Development. Support Project Management customer requirements by providing core expertise to Integrated Product Development Teams..
Technical Assistant	Technical assistance to the Control and Data Systems Laboratory Chief.
Lead, Operating Systems and Networks	Senior software design engineer for operating systems and networks.

	Knowledge of host hardware for operating systems and networks across a multitude of platforms and network types. Management of assigned laboratories, testbeds, facilities, and equipment.
Lead, Human/Machine Interfaces	Senior software design engineer for human/ machine interfaces. Develop all software, hardware and the intelligent applications required for machine interfaces with humans. Management of assigned laboratories, testbeds, facilities, and equipment.
Lead, Real-Time Technology Development	Senior software design engineer for real-time system technologies. Development of real-time hardware and software technologies in medium to large scale systems. Management of assigned laboratories, testbeds, facilities, and equipment.
Lead, Embedded Technology Development	Senior hardware/software design engineer for embedded system technologies. Development of embedded hardware and software technology required for single or multi-processor control units. Management of assigned laboratories, testbeds, facilities, and equipment.
Lead, Integrated Communications	Senior hardware design engineer for integrated communications. Development of new technology for unique or integrated audio, video and data sources; networking and storage technologies; and encoding and decoding techniques.

	Management of assigned laboratories, testbeds, facilities, and equipment.
Technical Discipline Engineers	Hands-on development in laboratories and testbeds.
	Guidance and assistance to laboratory/testbed customers.

Instrumentation Laboratory

Chief	Management of Instrumentation Laboratory personnel and resources to support the goals of the Associate Director for Technology Development.
.	Support Project Management customer requirements by providing core expertise to Integrated Product Development Teams..
Technical Assistant	Technical assistance to Instrumentation Laboratory Chief.
Lead, Analytical Instruments	Senior hardware design engineer for analytical instruments.
	Development of all technology required for analytical instrumentation utilizing the fields of electronics, physics and chemistry.
	Management of assigned laboratories, testbeds, facilities, and equipment.
Lead, Sensors, Transducers and Data Acquisition	Senior hardware design engineer for sensors, transducers and data acquisition.
	Development of all technology required for sensors, transducers and data acquisition instrumentation utilizing the fields of electronics and chemistry.
	Management of assigned laboratories, testbeds, facilities and equipment.
Lead, Software Development	Senior software design engineer for software development of various high-level languages and assembly languages.

	Management of assigned laboratories, testbeds, facilities, and equipment.
Technical Discipline Engineers	Hands-on development in laboratories and testbeds.
	Guidance and assistance to laboratory/testbed customers.

Automated Ground Support Systems Laboratory

Chief	Management of Automated Ground Support Systems Laboratory personnel and resources to support the goals of the Associate Director for Technology Development.
	Support Project Management customer requirements by providing core expertise to Integrated Product Development Teams..
Technical Assistant	Technical assistance to Automated Ground Support Systems Laboratory Chief.
Lead, Automation and Robotics	Senior hardware design engineer for automation and robotics.
	All development of technology in the field of automated mechanisms.
	Management of assigned laboratories, testbeds, facilities, and equipment.
Lead, Electrical Controls	Senior hardware/software design engineer for electronic controls.
	Position sensing and control hardware/software technology development.
	Management of assigned laboratories, testbeds, facilities, and equipment.
Technical Discipline Engineers	Hands-on development in laboratories and testbeds.
	Guidance and assistance to laboratory/testbed customers.

Development Testing Laboratory

Chief	Management of the Development Testing Laboratory, for fabrication, testing, and modification of prototype hardware and fixtures. Management of resources, product quality, product schedules, performance metrics, and customer satisfaction.
Technicians	Hands-on hardware fabrication, testing, and modification in laboratories and testbeds. Guidance and assistance to customers.

Future Vehicles and Advanced Programs Office

Chief	Management of KSC activities in support of Future Vehicles and Advanced Programs.
Technical Managers	Technical program planning, concept development and integration. Initiation of studies for future launch vehicles and associated facilities and ground support equipment. KSC single point of contact for other NASA Centers, NASA Headquarters, Department of Defense, contractors and other program offices as they relate to future launch vehicle activities.

Technology Programs and Commercialization Office

Chief	Management of the Technology Programs and Commercialization Office.
Deputy Chief	Assists Chief of the Technology Programs and Commercialization Office. Management of Technology Programs and Commercialization Office in the absence of the Chief.
Technical Assistant	Technology Programs technical planning and integration.

	Small Business Innovation Research Program Manager
Patent Attorney	Management of Patent and Licensing Program.
	Intellectual property counseling.
Managers	KSC management of Commercial Technology Programs and associated support functions.
Managers	KSC management of Technology Programs and associated support functions.
Paralegal Specialist	Provide support to Commercial Technology and Technical Program managers.
	Maintains legal records and systems.

Administrative Office

Chief	Management of all administrative support services in Engineering Development.
Administrative Specialists	Interface and support for all administrative services in Engineering Development.

2.0 MISSION

To lead, integrate and provide technical expertise in engineering, design and development of Ground Systems Facilities and Equipment for current and future space vehicles and payloads; advanced development of systems supporting future NASA missions; and Technology Programs and Commercialization.

3.0 MISSION OBJECTIVES

- Provide management and integration for all directorate projects, Center Advanced Development projects, and Center design and development projects that include new capabilities and assigned major modifications required for servicing or interfacing with Payloads, Space Station, Shuttle, Expendable Launch Vehicle (ELV) and development projects for new future vehicles, payloads or new program elements.

- Promote engineering professionalism across the KSC civil service workforce.

- Provide systems and technologies for the exploration and development of space that meet our customer expectations.

- Promote and increase the application and commercialization of NASA-developed technology.

- Meet all customer requirements by providing core expertise to Integrated Product Development Teams.

- Integrate, report, and perform process management and control for KSC Integrated Product Development Teams.

- Increase hands-on development training and development opportunities for KSC civil service.

- Develop and document a system for capturing past and future design and development rationale to enable ongoing core skill development.

- Expand our services to include complete project life cycle, concept through completion, in the development of future projects for unique space exploration capabilities.

- Use areas of KSC unique knowledge, such as cryogenic systems, remote checkout and control systems and vehicle health management, to expand the range of design and development services to new spacecraft, vehicle design, and space systems.

- Increase the number of proposals coming into the Technology Programs and Commercialization Office from KSC Directorates by 25%.

- Increase the number of new technologies reported to the Technology Programs and Commercialization Office by 5%.

- Increase the amount of license royalties of KSC technologies by 25%.

- Integrate and manage all aspects of KSC as a Technology Testbed.

3.1 COLLATERAL OBJECTIVES

- To meet agency requirements imposed upon fellow NASA directorates and program offices.

- To meet legislative and regulatory requirements.

4.0 SUPPORT AGREEMENTS

This section defines the support provided by the Engineering Development Directorate to NASA.

4.1 Management and integration for all directorate projects, Center Advanced Development projects, and Center design and development projects that include new capabilities and assigned major modifications required for servicing or interfacing with Payloads, Space Station, Shuttle, Expendable Launch Vehicle (ELV) and development projects for new future vehicles, payloads or new program elements.

4.2 KSC Project Management Council (PMC) process management.

4.3 Design/development and systems engineering for GSE, systems and unique facilities/structures.

4.4 Program Management for assigned areas in:

4.4.1 Technology Development, Commercialization, and Transfer Programs
4.4.2 Advanced Programs
4.4.3 Future Launch Vehicles Program

4.5 Provide laboratory and testbed facilities for KSC.

4.6 Fabrication and test of prototype hardware.

4.7 Sustaining engineering for selected components and systems.

4.8 Manage the agency Technical Specifications and Standards program.

4.9 Manage transition of KSC to the Metric system.

4.10 Manage Center Director's Discretionary Fund.

4.11 Represent KSC on Commercial Technology Management Team.

4.12 Provide requirements for Contractor compliance with new reporting.

4.13 Represent KSC in Federal Lab Consortium (FLC).

4.14 Provide intellectual property counseling

4.15 Assure intellectual property protection of KSC technologies.

4.16 Promotion and licensing of KSC technologies.

4.17 Develop partnerships for KSC technology transfer.

4.18 Promote resource leveraging and KSC prioritization of technology projects.

4.19 Promote small business and university development of NASA technologies

4.20 Administer Space Act Awards Program

4.21 Promote Technology Transfer to industry and agencies

4.22 Promote KSC as a Technology Testbed.

4.23 Represent KSC on the NASA Engineering Management Council.

5.0 PROCESSES

This section establishes the procedures required to perform the tasks necessary to achieve the strategic objectives and support agreements of DE.

KDP-P-1526 John F. Kennedy Space Center Project Management Council (KPMC) Review Process

KDP-P-1527 Program Operating Plan (POP) and Phasing Plan Preparation and Submittal

KDP-P-1528 Engineering Development Contract (EDC) Award Fee Evaluation Process

KDP-P-1529 Engineering Development Contract (EDC) Level of Effort Work Order Process

KDP-P-1530 Project Development Process

KDP-P-1531 Advanced Technology Project Prototyping Process

KDP-P-1532 Design Project Prototype Process

KDP-P-1533 Development Testing Laboratory Process

KDP-P-1534	Launch Equipment Test Facility Testing Process
KDP-P-1535	Design Review Process
KDP-P-1536	Design Certification Review (DCR) Process
KDP-P-1537	Document Release Authorization (DRA) Process
KDP-P-1538	NASA KSC Specifications, Standards Review and Approval Process
KDP-P-1539	Purchase Request (PR)/Procurement Requests for Services (MR) Approval Process
KDP-P-1540	Small Business Innovative Research (SBIR) Phase I and II
KDP-P-1541	Reimbursable Projects
KDP-P-1542	Commercial Technology Success Stories
KDP-P-1543	Advanced Development Program
KDP-P-1544	Commercialization Partnership Program
KDP-P-1545	Commercial Technology Newsletter/Publications
KDP-P-1546	University Programs Solicited Proposals - NASA Research Announcement
KDP-P-1547	Space Act Board Actions Awards
KDP-P-1548	Research and Technology Report
KDP-P-1549	Commercial Technology metrics and reporting for the Government Performance Results Act
KDP-P-1550	Industry Briefings and Training
KDP-P-1551	KSC New Technology Report Processing
KDP-P-1552	Technology Inquiries
KDP-P-1553	Patents
KDP-P-1554	Technology Transfer Agreement (TTA)

KDP-P-1555 Licensing

KDP-P-1556 Management of Unsolicited Proposals

6.0 PERFORMANCE INDICATORS

This section establishes the measurements required to assess the progress toward achieving the mission objectives of DE.

6.1 Number of technical publications and licensing agreements

6.2 The Customer Satisfaction Survey

6.3 Number of people participating in development projects.

6.4 Number of memberships in professional engineering societies such as ASME, IEEE, CTS and AIAA held by KSC civil service personnel.

6.5 External assessment of KSC's application and commercialization of NASA-developed technology by the Florida Business Roundtable.

7.0 EXTERNAL AGREEMENTS

- Technology Transfer Agreements
- Space Act Agreements
- Dual Use Agreements
- Reimbursable Agreements (NDPR)

Detailed itemization of specific agreements will be maintained in the office of the Director of Engineering Development